

**CONFIRMATION SAMPLING RESULTS**  
**APN 011-030-139**  
**HUMBOLDT ROAD PRIVATE PROPERTIES**  
**OPERATIONAL UNIT**



*Prepared for*

**Private Properties**  
**Humboldt Road Burn Dump**

*Prepared by*

**VESTRA**   
**962 Maraglia Street**  
**Redding, California 96002**

**September 2004**

September 28, 2004

530/223/2585

FAX 530/223/1145

704006

Karen Clementsen  
California Regional Water Quality Control Board  
Central Valley Region  
415 Knollcrest Drive  
Redding, Ca 96002

**VESTRA**



**Re: Confirmation Sampling Results  
APN 011-030-139  
Humboldt Road Private Properties Operational Unit**


Dear Ms. Clementsen:

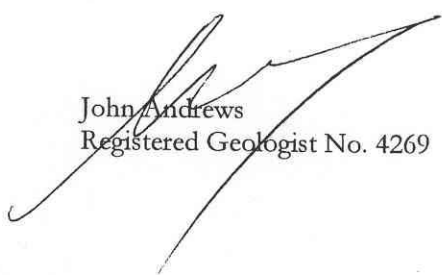
In conjunction with the remediation activities conducted at the Humboldt Road Burn Dump during the summer of 2004, residual burn ash and waste material on APN 011-030-139 were excavated and placed in the consolidation cell located on APN 011-130-138. Confirmation samples were also collected in accordance with the approved Sampling and Analysis Plan to document the residual levels of contamination on APN 011-130-139. Activities on this parcel are complete, and the final sampling results are summarized in this report.

If you have any questions, please call me or John Andrews at (530) 223-2585.

Sincerely,

**VESTRA Resources, Inc.  
Environmental Services Division**

  
Wendy Johnston  
Project Manager

  
John Andrews  
Registered Geologist No. 4269

cc: Tom Fogarty  
Tim Patenaude/DTSC  
Don Johnson/SDC  
Doug Aiken

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## Section 1 INTRODUCTION

Fogarty Investments, Inc. controls three parcels located within the boundaries of the Humboldt Road Burn Dump (HRBD). The assessor's parcel numbers include APN 011-030-136, APN 011-030-138, and APN 01-030-039. The bulk of the burn ash and waste debris was present in the southern portions of APN 011-030-036 and APN 011-030-138. Only a small portion of APN 011-030-139 was impacted by waste material. Generally, the impacted area in APN 011-030-139 was limited to approximately 1-acre of land along the south side of Deadhorse Slough.

In conjunction with the remediation activities conducted during the summer 2004, residual burn ash and waste debris on APN 011-030-139 was excavated and placed in the consolidation cell located on APN 011-030-138. Following the removal of this waste material, confirmation samples were collected in accordance with the Sampling and Analysis Plan (VESTRA, 2004a) prepared for the Humboldt Road Private Properties Operational Unit to document the residual levels of contamination on APN 011-030-139. The sampling results are summarized in this report.

### OBJECTIVE

This confirmation sampling report was prepared and is being submitted to expedite the issuance of a Site Completion Certificate for APN 011-030-139. This request is based on:

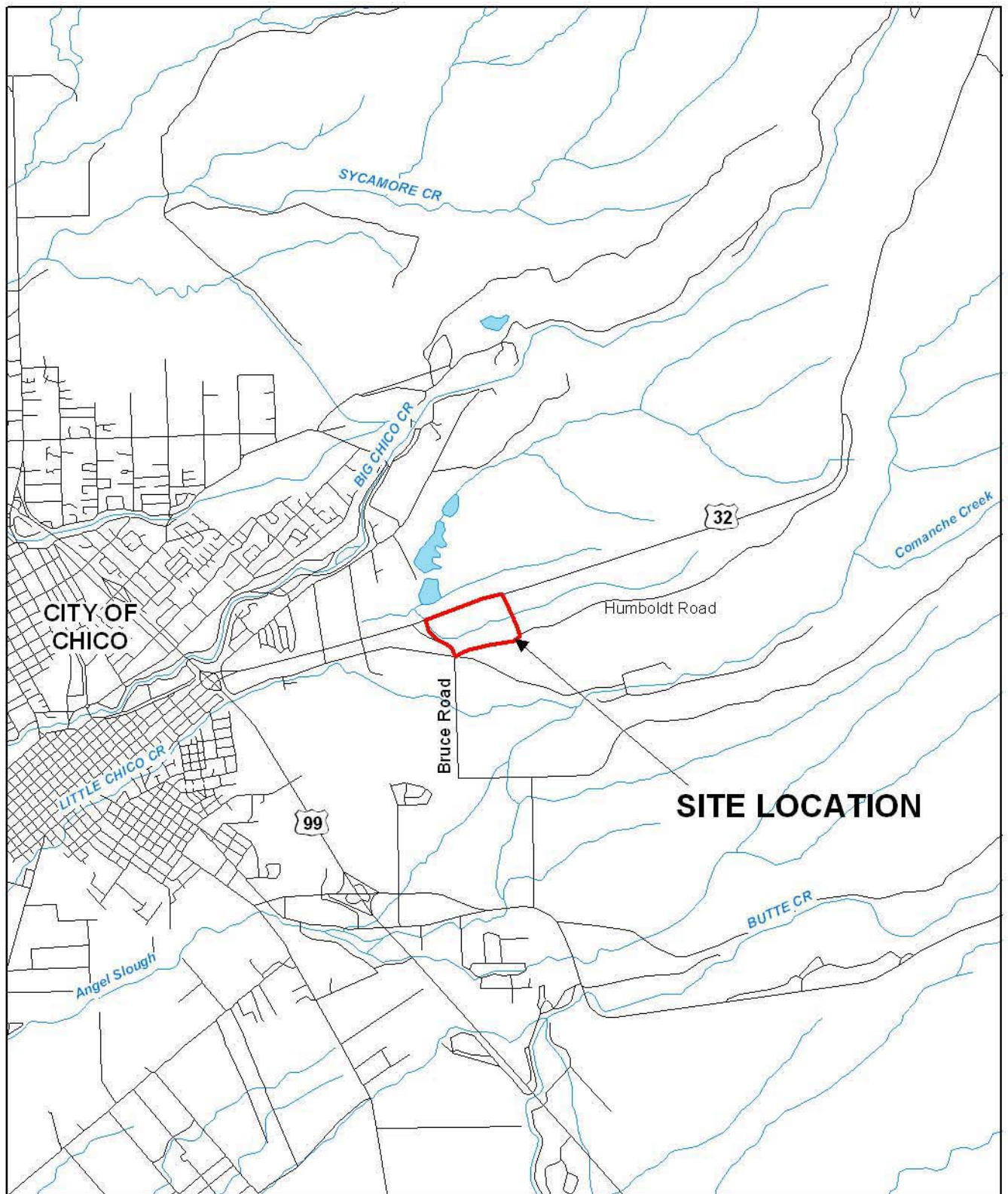
- Less than 1 acre of APN 011-030-139 was impacted by waste debris from the burn dump. Overall, the parcel includes approximately 43 acres.
- The waste debris identified on APN 011-030-139 was removed during summer 2004.
- 100 confirmation samples were collected to quantify the residual soil lead levels in APN 011-030-139. The average residual lead concentration is 28 mg/kg.
- The background soil lead concentration reported in the Remedial Investigation Report is 19 mg/kg.
- The Remedial Action Goal for lead at the Humboldt Road Burn Dump is 224 mg/kg.

### Site Location

The HRBD is a collection of adjacent properties totaling approximately 157 acres located near the intersections of Bruce Road, Humboldt Road, and Highway 32 in Chico, California. Burn ash and waste material has been identified on approximately 70 acres. The General Site Location of the HRBD is shown on Figure 1, and the Fogarty Parcels are identified in Figure 2. APN 011-030-139 is the focus of this confirmation sampling report.

### Previous Characterization Activities

Background information on the HRBD is summarized in the Final Remedial Action Plan (VESTRA, 2004b) prepared for the Humboldt Road Private Properties Operational Unit. Additional information for the site is presented in the Remedial Investigation Report (EMKO, 2001a), Baseline Risk Assessment (EMKO, 2001b), and Feasibility Study (EMKO, 2002) completed for the site.



**VESTRA**

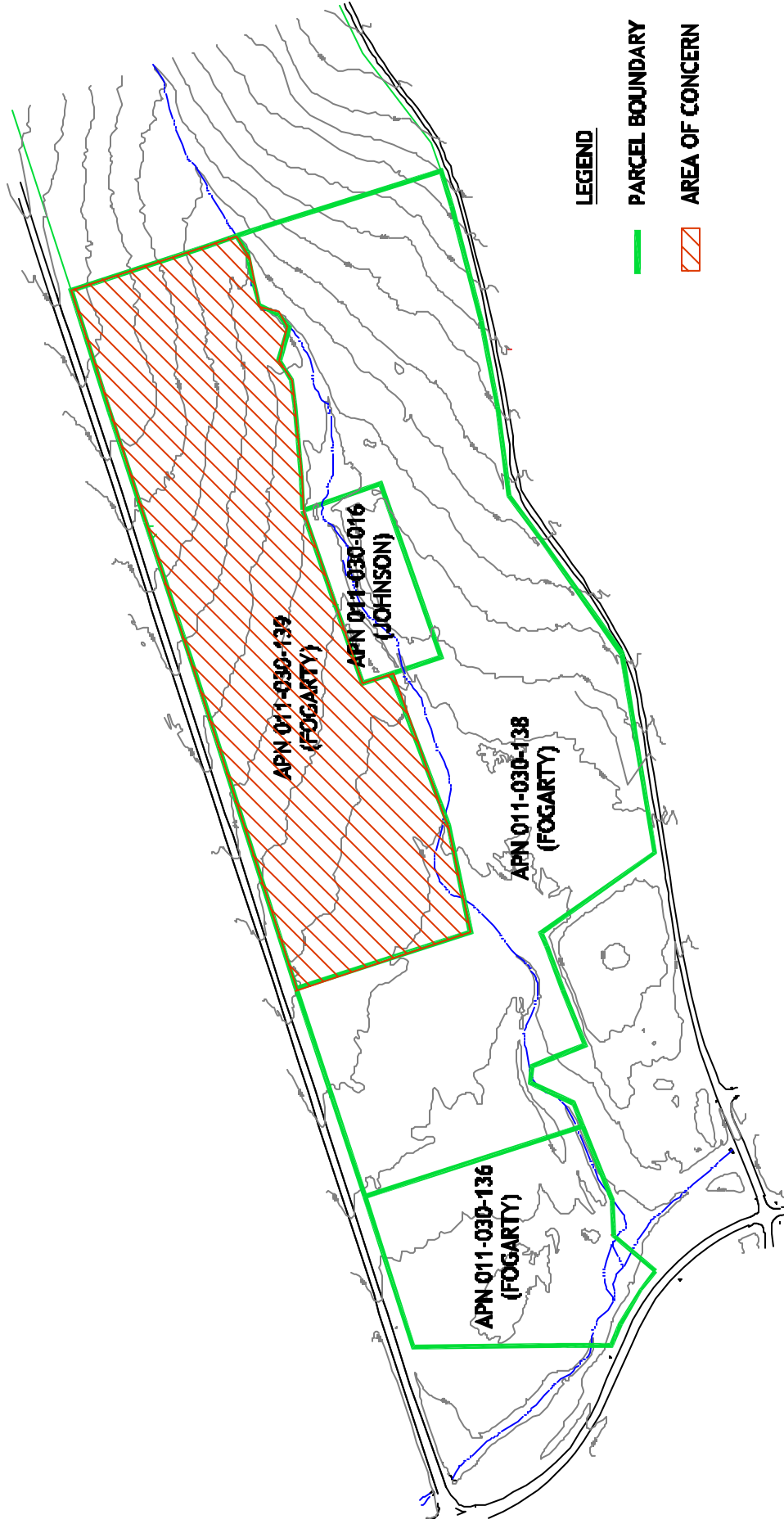


JOB NO. 704006

0 0.5 1 2 Miles

FIGURE 1  
GENERAL SITE LOCATION  
HUMBOLDT ROAD PRIVATE PROPERTIES  
CHICO, CALIFORNIA

SEPTEMBER 2004



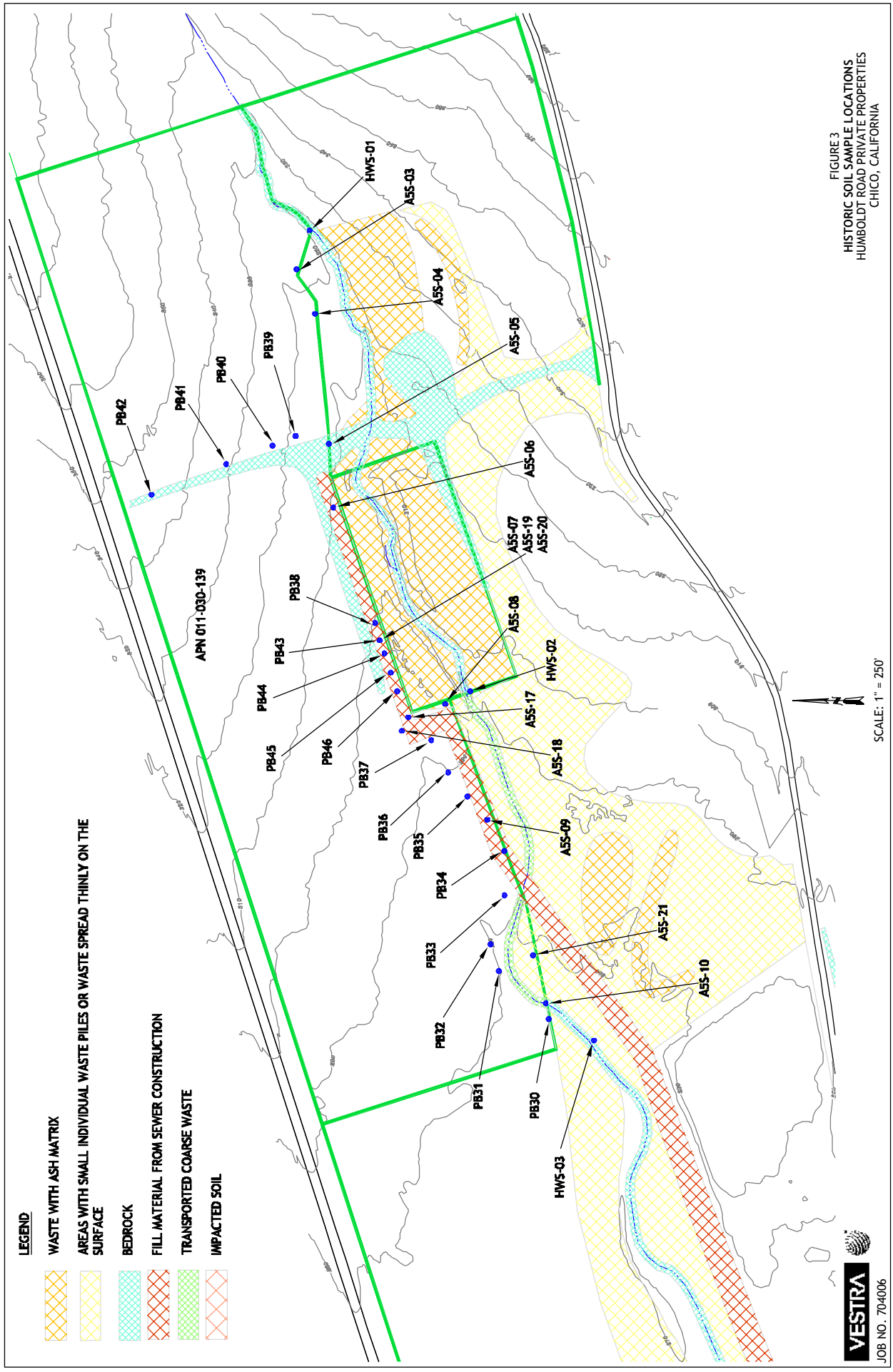
JOB NO. 704006

**FIGURE 2**  
**FOGARTY PARCELS**  
 HUMBOLDT ROAD PRIVATE PROPERTIES  
 CHICO, CALIFORNIA

In conjunction with the Remedial Investigation, soil samples were collected from APN 011-030-139. The sample locations are shown in Figure 3 and the results are summarized in Table 1.

<b>Table 1</b> <b>PREVIOUS SAMPLING RESULTS</b> <b>APN 011-030-139</b>				
<b>Sample ID</b>	<b>Date Sampled</b>	<b>Lead (mg/kg)</b>	<b>Arsenic (mg/kg)</b>	<b>Comment</b>
A5S-3	Mar-00	15.8	nd	---
A5S-4	Mar-00	23	nd	---
A5S-5	Mar-00	25.1	nd	---
A5S-6	Mar-00	19.3	nd	---
A5S-7	Mar-00	3420	nd	Area removed in 2004
A5S-7 dup.	Mar-00	243	nd	Area removed in 2004
A5S-8	Mar-00	33.4	nd	---
A5S-9	Mar-00	55.9	nd	---
A5S-10	Mar-00	996	nd	Area removed in 2004
A5S-17	Mar-00	10.3	nd	---
A5S-18	Mar-00	28.7	nd	---
A5S-19	Mar-00	63	nd	---
A5S-20	Mar-00	78	nd	---
A5S-21	Mar-00	57	nd	---
A5S-21 dup.	Mar-00	51.7	nd	---
PB30	Oct-00	20	---	---
PB31	Oct-00	29.9	---	---
PB32	Oct-00	37.3	---	---
PB33	Oct-00	8.06	---	---
PB34	Oct-00	25.7	---	---
PB35	Oct-00	14.2	---	---
PB36	Oct-00	14.7	---	---
PB37	Oct-00	13.8	---	---
PB38	Oct-00	125	---	---
PB39	Oct-00	24.3	---	---
PB40	Oct-00	9.71	---	---
PB41	Oct-00	6.53	---	---
PB42	Oct-00	10.8	---	---
Average 1	---	195	nd	All samples
Average 2	---	32	nd	Excluding samples located within the 2004 removal areas.
Data from Remedial Investigation Report Soil, Waste, and Sediment, Humboldt Road Burn Dump (EMKO, 2001a)				

Additionally, sediment samples were collected along Deadhorse Slough throughout the project site. Although sediment samples were not collected from the portion of Deadhorse Slough that flows through

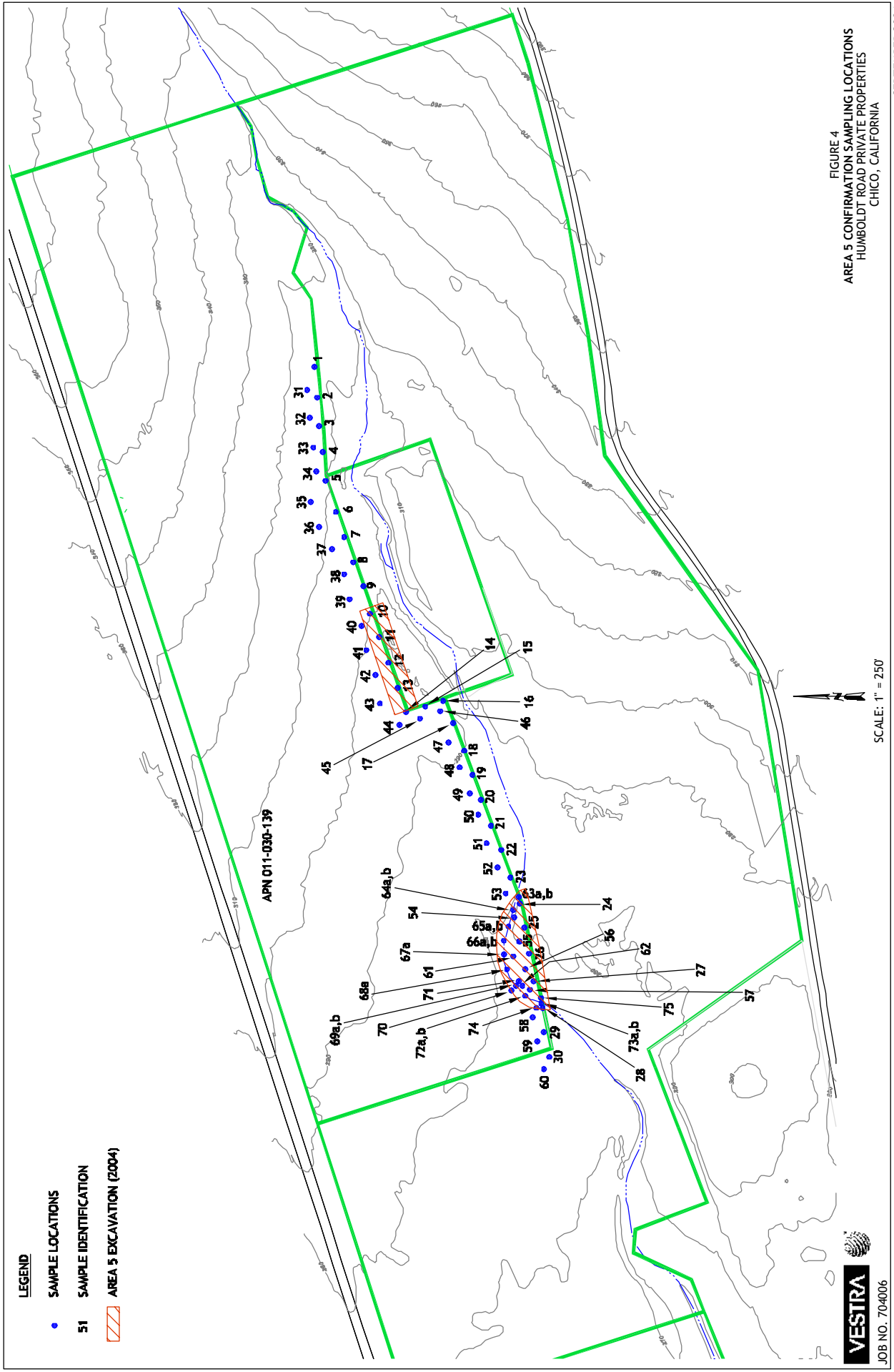


APN 011-030-139, elevated lead levels were observed in samples collected upstream and downstream from this area. The sample locations are shown on Figure 3, and the results are summarized in Table 2.

<p align="center"><b>Table 2</b>  <b>PREVIOUS SAMPLING RESULTS</b>  <b>DEADHORSE SLOUGH OUTSIDE APN 011-030-139</b></p>				
<b>Sample ID</b>	<b>Date Sampled</b>	<b>Lead (mg/kg)</b>	<b>Arsenic (mg/kg)</b>	<b>Comment</b>
HWS-01	Mar-00	2.51	nd	Upstream APN 011-030-016
HWS-02	Oct-00	3,150	15	Downstream APN 011-030-016
HWS-02 dup.	Oct-00	145	1.84	Downstream APN 011-030-016
HWS-02	Dec-01	1,320	7.38	Downstream APN 011-030-016
HWS-03	Mar-00	604	nd	Downstream APN 011-030-138
Average	---	1,044	---	---
Data from Remedial Investigation Report Soil, Waste, and Sediment, Humboldt Road Burn Dump (EMKO, 2001a)				

Based on the results summarized in Table 1, approximately 1,000 cubic yards (cyds) of waste material were removed from the property boundary between APN 011-030-139 and APN 011-030-016. Material removed from APN 011-030-139 had eroded from APN 011-030-016. A barrier of straw bails was placed on APN 011-030-139, along the south side of the fence marking the property boundary, to reduce the potential erosion during the 2004 winter season. Waste material on APN 011-030-016 will be removed during summer 2005.

Based on the results summarized in Table 2, and as confirmed prior to conducting the excavation activities, approximately 2,500 cyds of waste material were excavated from the horseshoe shaped area where Deadhorse Slough crosses APN 011-030-139. The excavation areas are shown along with the confirmation sample locations on Figure 4.



## Section 2

# CONFIRMATION SAMPLING PROGRAM

Confirmation soil samples were collected to document residual lead concentrations following the completion of the excavation activities in APN 011-030-139. The confirmation sample locations are shown on Figure 4.

## SAMPLING PROCEDURES

The following information was collected at each sample location:

- GPS Coordinates
- Identification of exposed material
  - Bedrock
  - Soil with no visible waste
  - Soil with surficial waste only
  - Soil with waste in soil matrix
- Photograph of grid point
- Soil sample if soil is present

In general, soil samples for lead analyses were collected by: 1) scraping away the vegetation, 2) loosening the soil to bedrock or a depth of approximately 6-inches using a decontaminated breaker bar, 3) placing the disturbed soil in a new gallon zip lock bag using a decontaminated stainless steel trowel, 4) mixing the soil in the zip lock bag and transferring a portion of the sample into a laboratory-supplied container, and 5) placing the container in an iced cooler. The field logs are included as Appendix A and representative photographs are included as Appendix B.

The initial soil samples were analyzed for total lead, and the results were used to direct the excavation. Following the completion of the excavation activities, 10 percent of the initial sample locations were re-sampled. The re-sample locations were randomly selected. Soil from each randomly selected location was analyzed for total lead. Additionally, one composite sample from locations 43, 46, 47 and 53, and one composite sample from locations 54, 59, 62/69b, and 74 were submitted for dioxin and furan analyses. Lead was analyzed using EPA Method 6010A, and the dioxin and furan analyses were conducted using EPA Method 8280A.

## FIELD ACTIVITIES

The excavation and confirmation sampling activities were conducted in the following sequence:

- 1) Removed contaminated soil from the property boundary between APN 011-030-139 and APN 011-030-016 (approximately 1,000 cyds), and from the horseshoe shaped area near Deadhorse Slough (approximately 2,000 cyds). At this point, sediment was not removed from Deadhorse Slough unless waste debris was observed in the stream channel. This incremental procedure was based on the preference expressed by the California Department of Fish and Game (DFG) that the channel be left intact unless it was documented to be contaminated.
- 2) Following the initial removal activities, 62 soil samples were collected from APN 011-030-139 and submitted for lead analyses. In general, the samples were collected along two transects parallel to the property boundaries between APN 011-030-139 and APN 011-030-016, and between APN 011-030-139 and APN 011-030-138. The first transect was located approximately

5 feet from the property boundary, and the second transect was located approximately 30 feet from the property boundary. Samples were collected every 75 feet along each transect.

- 3) RWQCB staff collected five split samples along the previously mentioned transects.
- 4) Lead levels were detected above the Remedial Action Goal of 224 in two samples collected from Deadhorse Slough, between zero and six inches in depth (see Column 2, Table 3).
- 5) Based on the elevated lead levels detected in these two samples, an additional 20 samples were collected along Deadhorse Slough to better characterize the lead contamination prior to removal, as requested by DFG (see Column 3 and 4, Table 3). In general, lead levels in excess of the Remedial Action Goal were documented in all of the sediment samples collected from the channel between zero and six inches in depth (see Column 3, Table 3). These results are consistent with previous results from Deadhorse Slough (see last row, Table 2). In contrast, lead levels in soil collected from a depth of two feet generally ranged between 1.0 and 10 mg/kg (see Column 4, Table 3).
- 6) Based on the characterization sample results, the channel of Deadhorse Slough in APN 011-030-139 was excavated to a depth of approximately two feet below the existing channel (approximately 500 cyds). Following the removal of this material, two additional samples were collected from the channel to document the residual levels of contamination (see Column 5, Table 3). Check dams were placed along this portion of the channel to control sediment this winter.
- 7) Verification samples were collected from 10 percent or eight of the previously sampled locations (see Column 6, Table 3). Although lead levels in excess of the Remedial Action Goal were documented in two of these samples, the average concentration at each location was below the Remedial Action Goal.
- 8) Based on the verification sample results, additional soil was removed from two areas to identify the extent of the waste material. The excavations involved removing six inches of material over approximately 1,000 square feet in each area. In general, waste material was not observed in either area.
- 9) Two additional confirmation samples were collected to verify that the soil lead levels in the two areas met the Remedial Action Goal of 224 mg/kg lead (see Column 9, Table 3).

## **SAMPLING RESULTS**

The sample locations are shown on Figure 4 and the corresponding lead results are summarized in Table 3. Overall 100 samples were collected. The final lead levels following removal are summarized in Table 3, Column 10. The average residual soil lead concentration is 28 mg/kg. This average concentration is consistent with previous results showing an average concentration of 32 mg/kg (see last row, Table 1). In contrast, the background lead concentration, reported in the Remedial Investigation Report (EMKO, 2001a), was 19 mg/kg.

The maximum residual lead concentration of 218 mg/kg was detected along the property boundary between APN 011-030-139 and APN 011-030-016.

In addition to lead, polychlorinated dibenzo-p-dioxins (PCDD) and polychlorinated dibenzofurans (PCDF) were identified as compounds of concern in APN 011-030-139. Dioxins refer to a family of 75

Table 3 SOIL LEAD RESULTS APN 011-030-139 (mg/kg)										
Sample ID	Round 1	Round 2a	Round 2b	Round 3	Verification Round	RWQCB Split	Duplicate Samples	Round 4	Final Result	Follow Up Action
Depth	< 6 inches	< 6 inches	24 inches	< 6 inches	< 6 inches	< 6 inches	< 6 inches	< 6 inches	< 6 inches	---
1	30.8	---	---	---	---	---	---	---	30.8	None
2	17.8	---	---	---	---	---	---	---	17.8	None
3	12	---	---	---	---	---	---	---	12.0	None
4	21	---	---	---	---	---	---	---	21.0	None
5	18.6	---	---	---	---	---	---	---	18.6	None
6	15.4	---	---	---	---	---	---	---	15.4	None
7	28	---	---	---	---	---	---	---	28.0	None
8	218	---	---	---	---	---	---	---	218.0	None
9	37	---	---	---	---	---	---	---	37.0	None
10	35.6	---	---	---	---	---	---	---	35.6	None
11	5.4	---	---	---	---	---	---	---	5.4	None
12	5.6	---	---	---	---	---	---	---	5.6	None
13	5.6	---	---	---	---	5.8	---	---	5.7	None
14	19	---	---	---	---	---	---	---	19.0	None
15	135	---	---	---	---	---	---	---	135.0	None
16	64	---	---	---	---	---	---	---	64.0	None
17	34.4	---	---	---	---	---	---	---	34.4	None
18	10	---	---	---	---	---	---	---	10.0	None
19	10	---	---	---	---	---	---	---	10.0	None
20	14	---	---	---	---	19.6	---	---	16.8	None
21	26.6	---	---	---	---	---	---	---	26.6	None
22	40.8	---	---	---	---	---	---	---	40.8	None
23	75.4	---	---	---	---	52.6	---	---	64.0	None
24	82.4	---	---	---	---	---	---	---	82.4	None
25	18.8	---	---	---	---	---	---	---	18.8	None
26	10.6	---	---	---	---	---	---	---	10.6	None
27	35.6	---	---	---	---	---	---	---	35.6	None
28/73	378	3.36	3.38	---	---	---	---	---	3.4	Channel Removed
29	22.4	---	---	---	---	---	---	---	22.4	None
30	28	---	---	---	---	---	---	---	28.0	None
31	28.6	---	---	---	---	---	---	---	28.6	None
32	9.8	---	---	---	---	---	---	---	9.8	None
33	12.8	---	---	---	---	---	---	---	12.8	None
34	10.8	---	---	---	---	---	---	---	10.8	None
35	9.6	---	---	---	---	---	---	---	9.6	None
36	15.8	---	---	---	---	---	---	---	15.8	None
37	14.4	---	---	---	---	---	---	---	14.4	None
38	12.8	---	---	---	---	---	---	---	12.8	None
39	24.8	---	---	---	---	---	---	---	24.8	None
40	21.8	---	---	---	---	---	---	---	21.8	None
41	126	---	---	---	---	---	---	---	126.0	None
42	31.8	---	---	---	---	---	---	---	31.8	None
43	20.8	---	---	---	11.4	---	---	---	16.1	None
44	14	---	---	---	---	---	---	---	14.0	None
45	40.6	---	---	---	---	---	---	---	40.6	None
46	132	---	---	---	266	---	---	5.2	5.2	Area Removed
47	16	---	---	---	13.2	---	15.3	---	14.9	None
48	17	---	---	---	---	---	---	---	17.0	None
49	20.4	---	---	---	---	---	---	---	20.4	None
50	19.6	---	---	---	---	---	---	---	19.6	None
51	19.8	---	---	---	---	---	---	---	19.8	None
52	68.4	---	---	---	---	---	---	---	68.4	None
53	83.8	---	---	---	233	104	---	7.8	7.8	Area Removed
54	41	---	---	---	98.9	---	---	---	70.0	None
55	8.8	---	---	---	---	---	---	---	8.8	None
56	59	---	---	---	---	48.4	---	---	53.7	None
57	76.2	---	---	---	---	---	---	---	76.2	None
58	40.2	---	---	---	---	---	---	---	40.2	None
59	9.6	---	---	---	<10	---	---	---	7.3	None
60	11.4	---	---	---	---	---	---	---	11.4	None
61	5.4	---	---	---	---	---	---	---	5.4	None
62/69	536	2.82	1.05	---	<10	---	---	---	3.0	Channel Removed
63a/b	---	901	12	---	---	---	---	---	12.0	Channel Removed
64a/b	---	663	7.04	---	---	---	---	---	7.0	Channel Removed
65a/b	---	1060	9.89	---	---	---	---	---	9.9	Channel Removed
66a/b	---	575	330	<10	---	---	---	---	5	Channel Removed
67a/b	---	1860	bedrock	---	---	---	---	---	bedrock	Channel Removed
68a/b	---	3.28	bedrock	---	---	---	---	---	3.3	Channel Removed
70	---	8.91	---	---	---	---	---	---	8.9	Channel Removed
71	---	23.7	---	---	---	---	---	---	23.7	Channel Removed
72a/b	---	2.14	1.33	---	---	---	---	---	1.3	Channel Removed
74	---	193	---	<10	<10	---	---	---	5	Channel Removed
75	---	3.26	---	---	---	---	---	---	3.3	Channel Removed
Maximum	---	---	---	---	---	---	---	---	218.0	---
Average	---	---	---	---	---	---	---	---	28	---
Count	62	13	7	2	8	5	1	2	100	---

individual compounds, and furans refer to a related family of 135 individual compounds. In general, it has been found that dioxin and furan compounds with chlorine substitutions in the 2,3,7, and 8 positions are toxic to animals. The most toxic dioxin and furan compound is 2,3,7,8-tetrachlorodibenzo-p-dioxin (commonly called 2,3,7,8-TCDD). Dioxin and furan compounds with chlorine substitutions in the 2,3,7 and 8 positions were not detected in the two composite samples submitted for analysis. The individual detection limits ranged between 0.3 and 1.2 parts per trillion (ng/kg).

The lead and dioxin laboratory analytical reports are included as Appendix C.

### Section 3

## **SUMMARY**

Approximately 3,500-cubic yards of waste material were removed from APN 011-030-139 during summer 2004. Following the removal activities, 100 soil samples were collected and analyzed for total lead. The average residual lead concentration of 28 mg/kg and the maximum residual concentration of 218 mg/kg are less than the Remedial Action Goal of 224 mg/kg. Based on these results, Mr. Thomas Fogarty is requesting a Site Completion Certificate for APN 011-030-139.

## Section 4

### REFERENCES

- EMKO. 2001a. *Remedial investigation report, soil, waste, and sediment, Humboldt Road Burn Dump, Chico, California*. Prepared for City of Chico by EMKO Environmental, Inc.
- EMKO. 2001b. *Baseline risk assessment, Humboldt Road Burn Dump, Chico, California*. Prepared for City of Chico by Risk-Based Decisions, Inc. and EMKO Environmental, Inc.
- EMKO. 2002. *Feasibility study report, Humboldt Road Burn Dump, Chico, California*. Prepared for City of Chico by EMKO Environmental, Inc., Brown and Caldwell, and Engineering/Remediation Resources Group, Inc.
- VESTRA, 2004a. *Remedial design and implementation plan, private parties operational unit*. Prepared for Private Properties Humboldt Road Burn Dump.
- VESTRA, 2004b. *Final remedial action plan, private parties operational unit*. Prepared for Private Properties Humboldt Road Burn Dump.